

ARC Comments on Quality Assurance Project Plan (QAPP), Fourth Version, July 2016

Developed by The Yerington Paiute Tribe (YPT) Environmental Office

1. **Cover Page, Page 1:** A line for an approval signature by the Laboratory Manager is not included.
2. **Section 1.4, Page 7, Paragraph 4:** Under “Principal Data Users”, entities only associated with the YPT Tribe are listed. Will there be anticipated users other than the YPT Tribe?
3. **Section 1.5, Page 7, Paragraph 7:** This QAPP does not conform to the current EPA guidance for QAPPs. It should be based on the Intergovernmental Data Quality Task Force “Uniform Federal Policy for Quality Assurance Project Plans, Optimized UPF-QAPP Worksheets”, March 2012.
4. **Section 1.5.1, Page 9, Paragraph 4:** It is stated that “*Currently, EPA manages the site with BP (operating as ARC at the site) as the Responsible Party*”. This statement is inaccurate as the EPA orders identify Atlantic Richfield Company (ARC) as the Respondent.
5. **Section 1.5.3, Page 10, Paragraph 1:** It is stated that “*EPA reviewed the determination of background water quality values and determined that ARC had some errors in the set of wells that were assigned to the group of un-impacted mine water wells.*” Apparently, this statement refers to wells located to the west and currently it remains an open issue. In comments on the Background Groundwater Quality Assessment Report provided on September 27, 2016, EPA clarified its position on this issue stating that: “EPA has reached the conclusion that mine-impacted groundwater likely does not extend westward as far as well B/W -16S but more likely extends to an area between wells B/W-16S and B/W-33S.”
6. **Section 1.5.3, Page 10, Paragraph 2:** It is stated that “*The current assessment showing the plume at the reservation boundary (Figure 3)...*”. This statement is inaccurate as the Background Groundwater Quality Assessment and Figure 3 show the northern (leading) edge of the plume well south of Campbell Lane and the reservation’s southern

boundary. The EPA indicated that no further work would be done, as discussed in a meeting on June 29, 2016.

7. **Section 1.5.3, Page 10, Paragraph 3:** It is stated that *“Atmospheric deposition of dust from the site has been documented (YPT 2012)...”*. ARC disagrees with this statement as the cited report is a cultural resources assessment report and not an EPA-approved RI document.
8. **Section 1.5.3, Page 10, Paragraph 4:** It is stated that *“...sediments containing elevated concentrations of COCs related to releases from the mine can be deposited in the wetland and associated agricultural property on the Reservation.”* ARC is of the opinion that this statement is not supported by the results of RI investigations.
9. **Section 1.5.3, Page 10, Paragraph 5:** It is stated that *“As indicated above, soil on the reservation can receive mine waste via windborne dust,...”*. ARC disagrees with this statement as it is not supported by previous risk assessment activities conducted by Brown and Caldwell.
10. **Section 1.5.4, Page 11, Paragraph 1:** It is stated that *“The data collected will be used to help determine impacts to natural resources on the reservation.”*, which indicates that the YPT's sampling work is being done for natural resource damages assessment, not RI characterization.
11. **Section 1.6.1.1, Page 11, Paragraph 6:** It is stated that *“Nine monitoring wells and two drinking water supply wells will be sampled each quarter.”* ARC is of the opinion that if these wells are already being sampled as part of the OU-1 groundwater monitoring program, there is no need for redundant sampling by the YPT.
12. **Section 1.6.1.1, Page 12, Paragraph 1:** It is stated that *“...DW-4 and DW-5, are located in this area,...”*. However, these two wells are not located within the defined plume boundary. Furthermore, it is stated that *“...impacts from the mine site could jeopardize the safety of the drinking water supply.”* However, water from these two supply wells is treated before distribution.

13. **Section 1.6.1.2, Page 12, Paragraph 4:** It is stated that “*Surface water sampling can provide data on...3. Water quality and quantity in the Wabuska Drain and Campbell Ditch...*”. ARC is of the opinion that water quality in the Campbell Ditch is not relevant to the OU-7 investigation.
14. **Section 1.6.1.2, Page 12, Paragraph 5:** It is stated that “*The sampling points for the surface water sampling program can be found in Figure 6 and the justification for the locations are found in Table 3.*” Table 3 says that water in Campbell Ditch can be used to estimate background groundwater conditions. However, ARC is of the opinion that background groundwater quality has been thoroughly evaluated, as reported in the BGQA report.
15. **Section 1.6.1.2, Page 13, Paragraph 1:** In the second bullet, it is stated that comparison of data points will be used to address “*...runoff from the mine coming onto the Reservation*”. ARC is of the opinion that it is not known if and where on the Reservation this occurs. In the sixth bullet, it is stated that comparison of data points will be used to address “*...storm water and irrigation flows in the Campbell Ditch*”. However, ARC is of the opinion that storm water and irrigation flows in the Campbell Ditch are not relevant to the OU-7 investigation.
16. **Section 1.6.2, Page 14, Paragraph 5:** It is stated that “*After 4 sampling events, additional parameters may be dropped if values are found to be stable (changes within expected analytical error with non-parametric trend analysis such as Mann Kendall or parametric such as linear regression).*” However, this QAPP does not provide for the collection of replicates so please indicate how the statistical trend analysis will be performed.
17. **Section 1.6.3, Page 15, Paragraph 2:** It is stated that “*Sediment sampling will be limited to two events. The sampling schedule is summarized in (Table 1).*” However, in Table 1 (and on Page 25), it is indicated that soil and sediment sampling is a one-time event.
18. **Section 1.7.2, Page 17, Paragraph 1:** It is stated “*...Region 9 Superfund screening levels (previously referred to as Preliminary Screening Levels, PRGs).*” Preliminary Screening Levels (or PSLs) are different from PRGs (or Preliminary Remediation Goals). It is also stated that “*Regulatory limits of interest found in the watershed include SDWA MCLs and those listed in Appendix E.*” However, there is not an Appendix E included with the YPT QAPP.

19. **Section 1.7.3, Page 17, Paragraph 4:** It is stated that *“For quantitative assessment of laboratory methodology, the laboratory’s QA Manual and analytical SOPs have been determined to be adequate to meet the data quality needs of the project.”* Who determined that the QA Manual and analytical SOPs were adequate and how was this determined?
20. **Section 1.7.3, Page 18, Paragraph 3:** It is stated that field duplicates will be collected at a rate of 5% or 1 duplicate per 20 field samples. For the various field investigations conducted by ARC at the Site, field duplicates have been consistently collected at a rate of 10% or 1 duplicate per 10 field samples, as indicated in the QAPP-Revision 5 prepared for ARC (dated May 20, 2009).
21. **Section 1.7.3, Page 18, Paragraph 6:** Incorrect percent recovery equations are listed for laboratory control samples (Equation 2) and matrix spikes (Equation 3) as both have a “T” (for True spiked concentration) at the end. The “T” does not belong there.
22. **Section 1.7.3, Page 19:** For laboratory control samples, it is not indicated whether spiking will occur for all of the analytes being analyzed, which would be appropriate. Also, it is not indicated whether matrix spike duplicates will be analyzed which would be used for precision calculations.
23. **Section 1.7.3, Page 19, Paragraph 4:** The use of performance evaluation samples may not be useful to evaluate matrix effects on the analytical results.
24. **Section 1.9, Page 23:** It is unclear whether the laboratory data generated during the proposed sampling program will undergo Level IV data validation and/or Level II data verification. On this page under “Quarterly Reports”, there is no mention of data validation/verification. Under “Annual Report”, the 8th bullet indicates *“Evaluation of the data in meeting the project objectives,...”* but it is not indicated how the data will be evaluated and by whom. Please clarify how the data will be evaluated and by whom.
25. **Section 2.1, Page 25:** The sampling frequencies discussed here are not consistent with Table 1. As an example, it is stated *“Monthly sampling for general water quality parameters for all sites”*. However, in Table 1, the sampling frequency is indicated as

“Weekly when water is present” for field parameters. Again (see ARC Comment #17), it is indicated that *“Sediment and soil sampling is a onetime event.”*, whereas on Page 15, it is indicated that *“Sediment sampling will be limited to two events.”*. Furthermore, in the second bullet, pesticides are listed as an analytical parameter for surface water samples. ARC is of the opinion that pesticides are not relevant to characterizing potential mine-related impacts in OU-7.

26. **Section 2.3, Pages 27 to 29:** There is no indication in this section on how the samples will be stored in the field (i.e., overnight).
27. **Section 2.3.2, Page 28:** Although there are several references to a temperature blank requirement in the YPT QAPP, there is no mention in this section (“Sample Packaging and Shipping”) of including a temperature blank in each shipped cooler that contains samples that are required to be chilled below a certain temperature (typically 4 to 6 degrees Celsius).
28. **Section 2.4.2, Page 30:** It is stated that *“The Laboratory QA/QC Officer must notify the Laboratory Project Manager if there is any knowledge of the SOPs not being followed.”* There is no mention of also notifying the Tribal Project Manager (PM) for this issue.
29. **Section 2.5.1, Page 30, Paragraph 5:** It is stated that the types of QC samples to be collected include field blanks, temperature blanks, and field duplicates. Please clarify whether matrix spike/matrix spike duplicate (MS/MSD) samples also will be collected as a QC sample as is done by ARC for the various Site projects.
30. **Section 2.5.1, Page 30, Paragraph 6:** It is stated that *“If no equipment blanks are collected (and none are planned because samples will be collected directly into sample containers),...”*. Please indicate how soil and groundwater samples will be collected directly into sample containers such that equipment blanks will not need to be collected.
31. **Section 2.5.1, Page 30, Paragraph 7:** It is stated that *“Field blanks will be submitted blind to the laboratory for analysis of metals, hardness, and anions. No field blanks are planned for the other analytical parameters or field measurements as it is not expected that it would yield information critical to project data needs.”*. Typically, field blanks would be collected and analyzed for all analytical parameters, not just a subset. Field

blanks have been collected and analyzed for all analytical parameters of interest during the various field investigation programs conducted by ARC at the Site.

32. **Section 2.5.3, Page 31, Paragraph 7:** The fourth bullet indicates the analysis of matrix spike samples. Please indicate whether matrix spike duplicate samples also will be analyzed.
33. **Section 2.5.3, Pages 31-33:** Nothing is mentioned in this section about surrogate compounds in organics analyses.
34. **Section 2.5.3, Page 32, Paragraph 4:** It is stated that *“An LCS is an aliquot of clean water spiked with the analytes of known concentrations corresponding to the analytical method.”* Actually, an LCS is an aliquot of clean matrix spiked with the analytes of known concentrations. The LCS matrix depends on the matrix of the field samples collected.
35. **Section 2.5.3, Page 32, Paragraph 5:** It is stated that *“Corrective action, consisting of rerunning of all samples in the affected batch, will be performed if LCS recoveries fall outside of control limits.”* Re-running usually just means re-analysis. The corrective action should be re-digestion/re-extraction and then re-analysis.
36. **Section 2.5.3, Page 32, Paragraph 6:** For matrix spike samples, there is the need to spike at two levels to properly assess matrix effects.
37. **Section 2.5.3, Page 33, Paragraph 2:** It is stated that *“If laboratory duplicates exceed criteria, the corrective action will be to repeat the analyses. If results remain unacceptable, the batch will be rerun.”* Usually, corrective action is not taken for laboratory duplicate imprecision but if corrective action is taken, the entire batch must be re-analyzed and not just the laboratory duplicate sample.
38. **Section 2.8, Page 35, Paragraph 1:** It is stated that *“The equipment will be cleaned, inspected (including test calibration) one week prior to and within one week after each sampling event.”* There is no mention in this section for daily calibration checks of the field equipment or a reference as to where it is included (i.e., Appendix B, Field Analysis Methods).

39. **Figure 3, Page 46:** The modification in this figure is not consistent with EPA's comments during the meeting on June 29, 2016.
40. **Table 5, Page 55:** Total Nitrogen (calc. value) is listed as an analyte. This analyte should probably read "Total Nitrate/Nitrite Nitrogen". The MCL of 1.4 mg/L listed for Fluoride is incorrect and should read "4 mg/L". Furthermore, "MPN" indicated under "Method Reporting Limit" for both Total and Fecal Coliforms is not defined.
41. **Table 5, Page 55 and Table A4.1, Page 88:** The Method Reporting Limit listed in these tables for nitrate-nitrogen and nitrite-nitrogen in aqueous samples is 0.2 mg/L. This limit is twice as high as the Method Reporting Limit of 0.1 mg/L for nitrate-nitrogen and nitrite-nitrogen in aqueous samples used by ARC during the various field investigation programs at the Site.
42. **Table 7, Page 60:** The MCL units listed in this table for the pesticides 2,4-D, Diquat, Endothall and Glyphosate are in µg/L. The MCL values are correct but the units should be mg/L, not µg/L. Also, the analytical method for 2,4-D and Triclopyr is reported as EPA 625; this should probably read EPA 615. Lastly, MS/MSD is indicated in the footnotes to the table but there is no discussion of MSDs in the text.
43. **Table 8, Page 61:** The analytical method for aluminum, boron, calcium, iron, magnesium, potassium, and sodium is listed as "60108". This should read "6010B". The analytical method indicated for radium-226 and radium-228 should read "HASL 300", not just "HASL". The superscript can not be read for the residential soil RSL of 0.78 for thallium (presumably it should read "(6)"). The EPA ecological soil screening levels of 0.36 for cadmium; 34 for chromium; 56 for lead; 4,000 for manganese; 130 for nickel; and 79 for zinc all should have the abbreviation "(m)" next to the respective number to indicate that the screening level is for mammals.
44. **Table 9, Page 62:** The Method Reporting Limits listed in this table for several of the pesticides in soil/sediment are higher than the Method Reporting Limits listed in ARC's QAPP. For example, Table 9 lists the reporting limits of several pesticides as 0.02 mg/kg, whereas the reporting limits listed in Table 3-2 of ARC's QAPP for the same constituents are 0.005 mg/kg. Also, incorrect PRGs are listed for some analytes in this table. For example, correct PRGs include 0.9 for alpha-BHC, 0.32 for beta-BHC, 4900 for fluridone, and 0.11 for heptachlor. Chloroneb is listed as a surrogate probably for

Method 8081A (although typical surrogates according to this method are decachlorobiphenyl and tetrachloro-m-xylene) and triphenylphosphate is listed as a surrogate for Method 8141A. No surrogate is listed for Method 8151A (the method recommends 2,4-dichlorophenylacetic acid).

45. **Table 10, Page 63:** In this table for pH, it is indicated *“Calibration check every 4 hours, acceptable value to be $\pm 5\%$ ”*. It should be indicated in the table that the acceptable limit for pH is ± 0.1 units, as is indicated in Appendix B, Page 100 where it is stated *“Check meter using standard that is nearest the expected pH. If not within 0.1 pH units recalibrate meter using appropriate standards.”* Also, oxidation-reduction potential (ORP) should be included as a field parameter at least for groundwater samples.
46. **Table 13, Pages 64 and 65:** There are several errors in this table. It is indicated that analyses for TDS and sulfate do not require temperature preservation, whereas the respective analytical methods do require temperature preservation. The table lists Nitrate-Nitrogen with sulfuric acid as a preservative and a holding time of 48 hours. However, when a sample is preserved with sulfuric acid, the analysis provides results for total Nitrate/Nitrite-Nitrogen with a holding time of 28 days. It is indicated that sulfuric acid is the preservative for orthophosphate with a holding time of 48 hours; however, when a sample is preserved with sulfuric acid, the analysis provides results for total phosphorous. Lastly, cyanobacteria and microcystin are listed as analytes in the table and it indicates that preservatives are not needed for these two analytes. However, these two analytes (along with references to analytical methods) are not listed anywhere else in the QAPP. The typical method for these analytes is USEPA Method 544 which requires a number of preservation reagents.
47. **Section A2.6.0, Page 71:** Please indicate whether the laboratory will prepare the sample bottles with the required preservatives or whether preservatives will be added to the samples during sampling.
48. **Section A2.7.2, Page 72:** It is stated *“Water quality data should be collected in impoundments to determine if stratification is present.”* Please indicate to what impoundments that this statement is referring.
49. **Section A2.7.3.2, Page 73:** It is stated *“For samples containing a preservative, water will be collected into a clean (one-use) container and then poured into the container with*

preservative if needed.” Please indicate how it will be determined whether the one-use containers are not contaminated.

50. **Table A4.1, Page 88:** The Method Reporting Limit listed in this table for nitrate-nitrogen and nitrite-nitrogen in aqueous samples is 0.2 mg/L. This limit is twice as high as the Method Reporting Limit of 0.1 mg/L for nitrate-nitrogen and nitrite-nitrogen in aqueous samples used by ARC during the various field investigation programs at the Site. Also, reporting limits are not listed in this table for dissolved oxygen, temperature, and conductivity (“NA” instead of a reporting limit value); however, reporting limits for these parameters are listed in Table 4, Page 54. Lastly, the reporting limit for pH is incorrectly listed in this table as 1 pH unit instead of 0.1 pH unit.
51. **Appendix B, Page 100:** It is indicated that the field pH meter is to be calibrated to a solution of “appropriate” pH and then calibrated to a second calibration solution having a pH two or three units higher or lower than the first. This differs from the method used by ARC in the field where the pH meter undergoes a 3-point calibration to pH solutions of 4, 7, and 10.
52. **Appendix B, Page 100:** It is indicated that the field conductivity meter “...requires manufacturer recalibration.” and “Before each sampling event, the calibration should be checked against the provided standard...”. This differs from the method used by ARC in the field where the conductivity meter is calibrated at the start of each work-day to a calibration solution of known conductivity (typically 1413 microSiemens per centimeter [$\mu\text{S}/\text{cm}$]) and checked against two other calibration solutions of known conductivity (typically one higher and one lower than the value to which the meter was calibrated).
53. **Appendix B, Page 101:** It is indicated that the field dissolved oxygen meter is to be calibrated using the “fresh water-air calibration method”. Please verify whether this method differs from the method used by ARC in the field where the DO meter is calibrated to ambient air and then checked against a zero-oxygen solution.
54. **Appendix B, Page 101:** It is indicated that “The turbidity meter should be calibrated monthly as per manufacturer specifications”, and no methods for calibration are indicated. This differs from the calibration method used by ARC in the field where the turbidity meter is calibrated daily before the start of each day’s sampling event, and the meter is calibrated to 3 solutions (0.02, 10, and 1000 nephelometric turbidity units [NTUs]).

55. **Appendix B, General Comment:** ARC conducts a “drift check” on the field meters at the end of each work-day. It is not indicated in the YPT QAPP whether drift checks will be conducted on their field meters at the end of each work-day.